Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-28 (cancelled).

29 (previously presented): A homogeneous method for determining the chemosensitivity of cells towards at least one substance in a sample by measuring the apoptosis induced by the at least one substance comprising the steps of:

- incubating the cells essentially concurrently with at least one marker whose specific binding capability to phosphatidylserine can be detected and with the at least one substance, and
- detecting the binding between the marker and phosphatidylserine as a function of time in the sample.

Claims 30-50 (cancelled).

51 (new): A homogeneous method for determining the chemosensitivity of cells towards at least one substance in a sample by measuring the apoptosis induced by the at least one substance comprising the steps of:

- adding to the cells at least one marker whose specific binding capability to phosphatidylserine can be detected, wherein the marker is added prior to or essentially concurrently with the at least one substance,
- incubating the cells with the at least one marker and with the at least one substance, and
- detecting the binding between the marker and phosphatidylserine as a function of time in the sample.

52 (new): The method according to claim 51, wherein the cells are animal cells.

53 (new): The method according to claim 52, wherein the cells are leukemia cells, cells of solid tumors, or cells of pathologic organs.

54 (new): The method according to claim 51, wherein the cells are reference cells.

55 (new): The method according to claim 54, wherein the reference cells are from non- pathological organs or from healthy regions of pathological organs.

56 (new): The method according to claim 51 further comprising the steps of performing a reference measurement without the addition of the at least one substance.

57 (new): The method according to claim 51 wherein the at least one substance is selected from the group consisting of pharmaceutically active substances, chemotherapeutic agents, environmental pollutants, peptides, nucleic acids and derivatives thereof, peptide nucleic acids, and nucleic acid hybrids.

58 (new): The method according to claim 51 wherein the at least the marker is selected from the group consisting of antibodies, Fab fragments, single-chain antibodies, aptamers, and other proteins having binding sites for phosphatidylserine.

59 (new): The method according to claim 51 wherein the said marker comprises a dye portion, a colloidal precious metal, a radioactive isotope, rare-earth metal chelate or a combination, thereof.

60 (new): The method according to claim 51 wherein the detecting step distinguishes apoptotic cells from necrotic cells.

61 (new): The method according to claim 60 further comprising the steps of co-incubating the cells with a marker for necrotic cells.

62 (new): The method according to claim 61 wherein said marker is a dye interacting with nucleic acids which cannot permeate intact cell membranes.

63 (new): The method according to claim 51 wherein detecting is performed by an imaging method.

64 (new): The method according to claim 63 wherein the imaging method comprises fluorescence detection.

65 (new): The method according to claim 63 wherein comprises confocal or conventional microscopy.

66 (new): The method according to claim 51 further comprising the steps of standardizing the number of cells identified as apoptotic for the total number of cells.

67 (new): The method according to claim 51 wherein the detecting step is performed with a time resolution of hours or at greater time intervals.

68 (new): The method according to claim 51 wherein the marker is annexin V in the presence of calcium in a concentration range of from 0.1 to 30 Mm.

69 (new): The method according to claim 68 wherein the calcium concentration range is from 1 to 10 mM.

70 (new): The method according to claim 51 used for screening for apoptotically effective substances.